

First records of the phytophagous *Eumerus strigatus* (Fallén) (Diptera: Syrphidae: Syrphinae: Merodontini) in Argentina

TORRETTA, Juan P.^{1,5,*}, HAEDO, Joana P.^{2,3,5}, ALLASINO, Mariana L.⁴
& MARRERO, Hugo J.^{2,3,5}

¹ Universidad de Buenos Aires, Facultad de Agronomía, Cátedra de Botánica General. C.A.B.A., Argentina. * E-mail: torretta@agro.uba.ar

² Centro de Recursos Naturales Renovables de la Zona Semiárida, CONICET. Bahía Blanca, Argentina.

³ Laboratorio de Interacciones Bióticas en Agroecosistemas (LIBA), UNS. Bahía Blanca, Argentina.

⁴ Área de Investigación y Desarrollo Tecnológico para la Agricultura Familiar Región Cuyo, INTA. San Martín, San Juan, Argentina.

⁵ Consejo Nacional de Investigaciones Científicas y Técnicas. Argentina.

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Primeros registros del fitófago *Eumerus strigatus* (Fallén) (Diptera: Syrphidae: Syrphinae: Merodontini) en Argentina

RESUMEN. Se reporta la presencia del sírfido exótico *Eumerus strigatus* (Fallén) por primera vez en Argentina. Individuos de esta especie fueron capturados en dos sitios distanciados más de 1.000 km (Villalonga, provincia de Buenos Aires y Pocito, provincia de San Juan) asociados al cultivo de cebolla (*Allium cepa* L.). Proponemos el monitoreo de este sírfido fitófago por su riesgo potencial para dicho importante cultivo hortícola.

PALABRAS CLAVE. *Allium cepa*. Especie exótica.

ABSTRACT. The exotic syrphid *Eumerus strigatus* (Fallén) is reported for the first time in Argentina. Individuals of this species were captured in two sites distant more than 1,000 km (Villalonga, province of Buenos Aires, and Pocito, province of San Juan) associated with onion crops (*Allium cepa* L.). We propose the monitoring of this phytophagous hover fly because of its potential risk for this important horticultural crop.

KEYWORDS. *Allium cepa*. Exotic species.

Agricultural land use modifies ecosystem structure and functioning in natural landscapes. This transformation is the main cause of biodiversity change and loss worldwide, product of agricultural expansion, use of agrochemicals, natural habitats loss and fragmentation, and the introduction of exotic species (Tscharntke et al., 2005). The introduction (either intentional or unintentional) of exotic species in new areas could lead to an imbalance in the stability of the host community biodiversity (Bradshaw et al., 2016). However, not all alien species are invasive (Blackburn et al., 2011), but for those potentially problematic or

harmful species, control plans should be considered (Simberloff et al., 2013).

Syrphidae (hoverflies or flower flies) is one of the most diverse and attractive families of Diptera, with over 6,200 described species worldwide except Antarctica and remote oceanic island (Young et al., 2016). Most adult flies are beneficial pollinators (Doyle et al., 2020) and the larval stages exhibit a great diversity of feeding behaviors. In Argentina, the hoverflies are represented by some 170 species (López-García et al., 2019), of which three are exotic: *Eristalis taeniops* Wiedemann, *Eristalis tenax* (L.), and *Syrirta flaviventris* Macquart

(Thompson et al., 1990; Thompson, 1997; Mengual & de Soto Molinari, 2020). Here, *Eumerus strigatus* (Fallén) (Syrphinae: Merodontini) is reported for the first time in Argentina, from individuals captured in two sites (distant more than 1,000 km) associated with onion crops.

In the New World, the tribe Merodontini is represented by the genera *Alipumilio* Shannon, *Cepa* Thompson & Vockeroth, *Nausigaster* Williston and the exotic *Eumerus* Meigen; the two latter are present in Argentina (Mengual & López-García, 2015; this study). The larvae are unknown in *Cepa* (Thompson et al., 2010), but the larvae of *Alipumilio* and *Nausigaster* are saprophagous in wet decaying vegetal material (Thompson et al., 2010; Mengual & López-García, 2015). On the other hand, the larvae of some species of *Eumerus* were reported feeding on living bulbs, tubers, stems, rhizomes, and decaying vegetal tissue (Ricarte et al., 2017); in particular, *E. strigatus* uses onion (*Allium cepa* L.), potato (*Solanum tuberosum* L.), and various *Narcissus* spp. as host larval (Speight et al., 2013; Ricarte et al., 2017).

Garcete-Barrett et al. (2020) comment that some species of *Eumerus* have been unintentionally transported by human trade outside their natural ranges and are now causing damage to crops in their new range. They also summarize the situation of the exotic genus *Eumerus* in the Neotropics, alerting on the expansion of *Eumerus obliquus* (Fabricius) through Brazil and Paraguay along the last twenty years. At present, in the Neotropics there are four established species of *Eumerus*: *E. aurifrons* (Wiedemann) in Paraguay (Garcete-Barrett et al., 2020), *E. funeralis* Meigen in Colombia (Thompson et al., 1976), *E. obliquus* in Brazil (Marinoni & Morales, 2007) and Paraguay (Garcete-Barrett et al., 2020), and *E. strigatus* in Chile (Gerding et al., 1999) and Argentina (this study).

In Chile, larvae of *E. strigatus* have been reported in five localities (Fig. 1) infesting onion and garlic commercial crop, and causing, in at least two of the sites, 40-42% of bulb losses (Gerding et al., 1999). Here, we report information about this species captured in two agricultural regions in Argentina: Villalonga (province of Buenos Aires; 40°03' S, 62°29' W) and Pocito (province of San Juan; 31°39' S, 68°25' W) (Fig. 1). In Villalonga, the main crops are onion and lucerne (*Medicago sativa* L.), while in Pocito there is production of horticultural crops such as onion, pumpkin (*Cucurbita* spp.) and tomato (*Solanum lycopersicum* L.), and fruit trees such as olive (*Olea europaea* L.) and grapevine (*Vitis vinifera* L.). In both sites, we studied the entomophilous vegetations associated with crops and the assemblages of floral visitors. As a result of four field works, we captured six individuals of *E. strigatus* (three females and three males). The studied individuals are deposited in the following institutions: Cátedra de Botánica General (FAUBA), Facultad de Agronomía, Universidad de Buenos Aires, Argentina; and Museo Argentino de Ciencias Naturales Bernardino Rivadavia (MACN),

Buenos Aires, Argentina. The map indicating the distributions in Argentina and Chile was constructed using SimpleMappr (Shorthouse, 2010).

For the determination at the generic level, key of Thompson (1999) was used. The genus is easily recognized by vein M strongly biangulate, with an external spur, the crossvein rm apical to middle of the cell dm. For the determination at specific level, we followed Garcete-Barrett et al. (2020). Also, we consulted Speight et al. (2013) and Grkovic et al. (2017) to confirm our results. All our individuals present rounded and completely black scutellum (see Fig. 4 c, in Garcete-Barrett et al., 2020), abdominal tergites 2-4 with transverse white dusted marking, eyes nearly bare, and the distance from hind ocelli to the posterior margin of the head was less than twice that to the front ocellus (see Fig. 5 f, in Garcete-Barrett et al., 2020); males: eyes holoptic; hind tarsus swollen, without a ventro-basal projection (see Fig. 5 d, in Garcete-Barrett et al., 2020); nor dorsoventrally flattened, nor covered with silver reflecting setae; posterior margin of sternite 4 making a shallow V-shape, coming to a blunt point on each side (without projection) and a narrow, but deep, median cleft (see Fig. 5 f, in Speight et al., 2013); and females: tergite 5 without a distinct basolateral ridge.

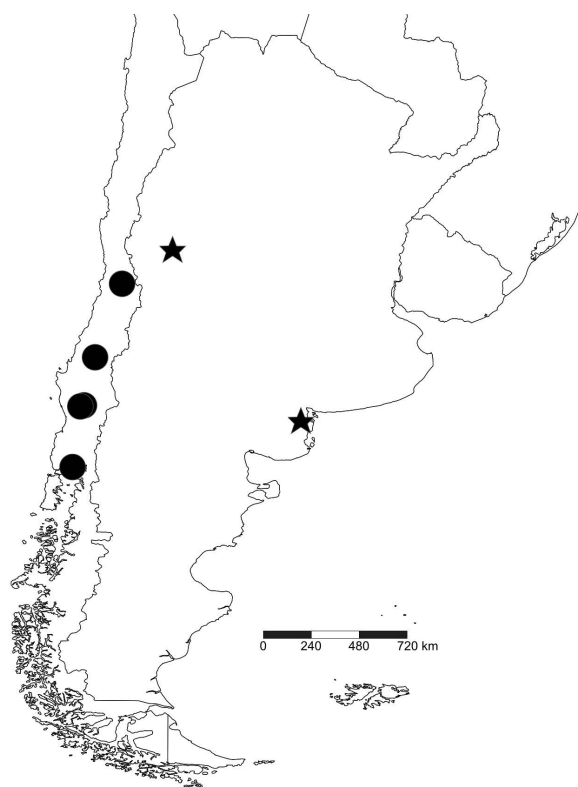


Fig. 1. Geographic distribution of *Eumerus strigatus* (Fallén) in Argentina and Chile. Black stars: new records; black circles: previous distribution.

New records

Eumerus strigatus (Fallén)

Material examined. Argentina. **New records.** Buenos Aires: Villalonga, 1 male, 22-XII-2017, ex *Hirschfeldia incana* (L.) Lagr.-Foss., J.P. Haedo & H.J. Marrero (FAUBA); 1 female, 1-XII-2018, ex *Medicago sativa*, J.P. Haedo & H.J. Marrero (FAUBA). San Juan: Pocito, 1 female and 1 male, 23-XI-2018, in white pan trap, M.L. Allasino (MACN); 1 male, 24-XI-2018, in blue pan trap, M.L. Allasino (FAUBA); 1 female, 23-I-2019, in yellow pan trap, M.L. Allasino (FAUBA).

Distribution: Palaearctic region, North America, Australia, New Zealand, Chile, and Argentina.

Here, we update to four the exotic species of Syrphidae in Argentina. We propose monitoring the presence of this phytophagous hover fly due to its potential risk for important horticultural crop. Moreover, we suggest conducting future studies addressing the spreading of *E. strigatus* in Argentina. Therefore, we have informed local authorities (Sistema Nacional de Vigilancia y Monitoreo de Plagas) about this study.

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